

EXHIBIT 1

A. nidulans sequences (Mns1B,C) as reported by:

AUTHORS Eades,C.J. and Hintz,W.E.
 TITLE Characterization of the class I alpha-mannosidase gene family in the filamentous fungus *Aspergillus nidulans*
 JOURNAL Gene 255 (1), 25-34 (2000)

T. reesei sequence reported by:

AUTHORS Maras,M., Callewaert,N., Piens,K., Claeysens,M., Martinet,W., Dewaele,S., Contreras,H., Dewerte,I., Penttila,M. and Contreras,R.
 TITLE Molecular cloning and enzymatic characterization of a *Trichoderma reesei* 1,2-alpha-D-mannosidase
 JOURNAL J. Biotechnol. 77 (2-3), 255-263 (2000)

Penicillium sequence reported by:

AUTHORS Yoshida,T. and Ichishima,E.
 TITLE Molecular cloning and nucleotide sequence of the genomic DNA for 1,2-alpha-D-mannosidase gene, msdC from *Penicillium citrinum*
 JOURNAL Biochim. Biophys. Acta 1263 (2), 159-162 (1995)

Aspergillus saitoi sequence reported by:

AUTHORS Inoue,T., Yoshida,T. and Ichishima,E.
 TITLE Molecular cloning and nucleotide sequence of the 1,2-alpha-D-mannosidase gene, msdS, from *Aspergillus saitoi* and expression of the gene in yeast cells
 JOURNAL Biochim. Biophys. Acta 1253 (2), 141-145 (1995)

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| Penicillium.citrinum | -----MRLP-VSFPLTVLSLLG-STIAHP-YGETEAVLRSEPKSNQAKADAVKEAF | 48 |
| Aspergillus.saitoi | -----MHLPSLSLSLTALAIAS-PSAAYPHFGSSQPVLSHSSDDTQSRADATKAAP | 50 |
| Mns1B | -----MRTLALAAAFAGFAAARVPAYAITRPVMSRD-----SRADAVKEAF | 41 |
| Trichoderma.reesei | -----MRFP-SSSVLALGLIG-PALAYPKPGATKRGSPNP-----TRAAAVKAAP | 43 |
| Mns1C | RTSTGGFNWGEIPVRYPVSDFIPLSTNSPATLPRIQRSSFPLOSS--ITKSRQAAVKGAF | 118 |
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| Penicillium.citrinum | QHAWNGYMKYAFPHDELTPVSNHGADSRNGWGASAVDALSTAVIMGKADVVALEHVAD | 108 |
| Aspergillus.saitoi | SHAWDGYLQYAFPHDELHPVSNHGADSRNGWGASAVDALSTAVIMRNATTIVNQLDHYGK | 110 |
| Mns1B | SHAWDGYNYAFPHDELHPIISNGYGDNRHWGASAVDALSTAVIMRNATTIVNQLDHYGK | 101 |
| Trichoderma.reesei | QTSWNAYHHFAFPHDDLHPVSNHGDNRNGWGSSAIDGLDTAILMGDADIIVNTILQYVPO | 103 |
| Mns1C | QRAWTSYTHAWKADEVRIITAGSRNNFGWGATLVDNLDITLLIMGLDEEFAAAVDALAD | 178 |
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| Penicillium.citrinum | IDFSKTSMT-----VSLFETTRIRYLAGMLSGYDLLQGPKNLVDNQDLIDGLDQSRNL | 162 |
| Aspergillus.saitoi | IDYSKTNMT-----VSLFETTRIRYLAGMLSGYDLLQGPVSDLVQNSSKIDVLLTQSKNL | 164 |
| Mns1B | VDYSKTNAM-----VSLFETTRIRYLAGMISGYDLLKGPAGLVDD-SRVDVLEQSONL | 154 |
| Trichoderma.reesei | INFTTTAVANQG---SSVFETTRIRYLAGMLSGYDLLQGPVSDLVQNSSKIDVLLTQSKNL | 160 |
| Mns1C | IEFSPHSSPSSSQSTINIFETTRIRYLAGMLSGYDLLQGPVSDLVQNSSKIDVLLTQSKNL | 228 |
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| Penicillium.citrinum | ADVLFKFAFDTPSGVPYNNINIT-SHGND---GATTNGLAVTGTLVLEWTRLSDLTGDEEY | 218 |
| Aspergillus.saitoi | ADVLFKFAFDTPSGVPYNNINIT-SGGND---GAKTNGLAVTGTLVLEWTRLSDLTGDEEY | 220 |
| Mns1B | AEVLFKFAFDTPSGVPYNNINIT-SGGND---GATTNGLAVTGTLVLEWTRLSDLTGDEEY | 210 |
| Trichoderma.reesei | ANGLKVAFTTPSGVPDPTVFVFNITVRRS---GASSNNVAEIGSLVLEWTRLSDLTGDEEY | 217 |
| Mns1C | GBMIYTSFDTENRMPVPRWNLHKGAGCEPQRAAVQGVLAELASSLEFTRLSDLTGDMRY | 288 |
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| Penicillium.citrinum | AKLSQKAESYLLKPPQSSSEPFPGLVGSSININDGQFAD-SRVSWNGGDDSYEYLKMY | 277 |
| Aspergillus.saitoi | ADLSQKAESYLLNPPQKSAEPFPGLVGSSININISNGQFTD-AQVSWNGGDDSYEYLKMY | 279 |
| Mns1B | ARLSQRAEDYLLHPEPAQYEPFPGLVGSAVNIADGRLAN-CHTSWNGGADSYEYLKMY | 269 |
| Trichoderma.reesei | AQLAQKGESYLLNPK-GSPEAWPGLIGTFVSTNSGTPOD-SSGSWSGLMDSFYEYLKMY | 275 |
| Mns1C | FDAASR-ITDLLDSQAGHTR-IPGLWPSVNVNLOKGDLTRGSTFGFGMADGAYEYLKTY | 346 |
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| Penicillium.citrinum | YVDP--KRFETYKDRWVLAESTIKHLKSHKSRPDLTFLSS---YSNR-NYDLSSQH | 329 |
| Aspergillus.saitoi | YVDP--KRFGLYKDRWVAAAQSTMOHLASHPSRRPDLTFLAS---YNNQ-TLGLSSQH | 331 |
| Mns1B | YVDP--ERFGLYRDRWVAAAESSINHLASHPSTRPDVTFAT---YNEEHQLGLTSHQ | 322 |
| Trichoderma.reesei | LYDP--VAFAYKDRWVLAGDSTIGHLGSHRSTRKDLTELSS---YNGQ-STSPNSCH | 327 |
| Mns1C | RLGGVGKGPQYERLARNALDAGRHLFRPMTDPHADILLPGVAHATSSSVGLEPRTEH | 406 |
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| Penicillium.citrinum | LTCFDGGSFLLGGTVLDRQDFIDFGLELDVGCEATYNSTLTGIGPDSWGWDP-----KK 383 |
| Aspergillus.saitoi | LTCFDGGSFLLGGTVLNRDFFINFGLDLVSGCHDTYNSTLTGIGPESFSWDT-----SD 385 |
| Mns1B | LTCFDGGSFLLGGTVLDRQDFIDFGLELDVAGCHETYNSTLTGIGPEQFSWDP-----NG 376 |
| Trichoderma.reesei | LASFSGGNFILGGILLNEQKYIDFGIKLASSYPGTXTQTASGIGPEGFAWVDSVTGAGGS 387 |
| Mns1C | LACFVCGMYALACKLFSNQTYLLTGRKLTDGCIWYYDNSPLGIMPEMFTVPACP----SV 462 |

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| Penicillium.citrinum | VPDQKEFYEKAGFYISSGSYVLRPEVIESFYAHRTGKEIYRDVWVNAFVAINSTCRT 443 |
| Aspergillus.saitoi | IPSSQQLYEKAGFYITSGAYILRPEVIESFYAWRVGTQETYRDWIWSAFSAVNDYCRT 445 |
| Mns1B | VPDSQKELFERAGFYINSGQYILRPEVIESFYAWRVGTGDGTYLEWVWNAFTNINKYCRT 436 |
| Trichoderma.reesei | PFSSQSGFYSSAGFWVTAPYYILRPETLESYYAYRVGTGDSKWQDLAWKALSIEDACRA 447 |
| Mns1C | AECPWDETRGGIYTYVRDGHYFLRPEAMESIFYMWRTGDEKYREAARWMTALEAVTKT 522 |

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| Penicillium.citrinum | DSGFAAVSDVNKANGGS-KYDNQESFLFAEVMKYSYLAHSEDAAWOVQKGGKNTFVYNT 502 |
| Aspergillus.saitoi | SSGFSGLTDVNAANGGS-RYDNQESFLFAEVMKYSYMAFAEDAANOVQPGSGNQFVFNTE 504 |
| Mns1B | ATGFAGLENVNAANGGG-RIDNQESFMFAEVLKYSFLTFAPEDDWQVQKSGNTFVYNT 495 |
| Trichoderma.reesei | GSAYSSINDVTQANGGG-ASDDMESFWFAELKYAVLIFARESDVQVQATCGNKFVFNTE 506 |
| Mns1C | EFGNAAVRDVMVEEGNVKREDSMESFWMAETLKLYLYLIFG-----ETDLVSLDDWVFNTE 577 |

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| Penicillium.citrinum | AHPISVARN----- 511 |
| Aspergillus.saitoi | AHPVRVSST----- 513 |
| Mns1B | AHPFKVYTPQ----- 505 |
| Trichoderma.reesei | AHPFSIRSSRRGGHLA 523 |
| Mns1C | AHPLRGAGS----- 586 |

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